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# SCHOOL OF HYGIENE,

## UNIVERSITY OF LIVERPOOL,

UNDER THE DIRECTION OF THE

## LIVERPOOL SANITARY SCIENCE INSTRUCTION COMMITTEE.

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# SYLLABUS

OF

# LECTURES AND DEMONSTRATIONS

ON

# SANITARY SCIENCE.

## *SESSION 1909-1910.*

(Especially arranged for persons desirous of qualifying as Sanitary Inspectors, but also open to all interested in the subject of Hygiene).

LIVERPOOL:

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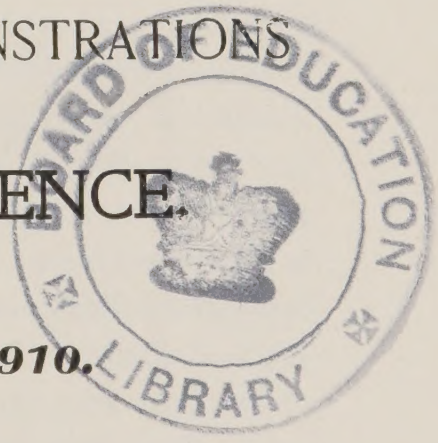


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1909

(24,580)

## Sanitary Science Instruction Committee.

*Chairman*—JOHN UTTING, Esq., M.D., C.C.

VICE-CHANCELLOR DALE, M.A.

ALDERMAN E. H. COOKSON, J.P.

E. K. MUSPRATT, Esq., J.P.

PROFESSOR PATERSON.

PROFESSOR SIR RUBERT BOYCE.

W. FORSHAW WILSON, Esq.

D. PEARSON, Esq., C.C.

*Hon. Treasurer*—RICHARD BARROW, Esq.,
*City Treasurer and Controller.*

*Hon. Sec.*—E. W. HOPE, M.D., D.Sc., &c.,
*Medical Officer of Health.*

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# PROSPECTUS.

THE CITY OF LIVERPOOL has many advantages for the practical study of Sanitary Science, and sanitary matters. The Medical Officer of Health and the Assistant Medical Officer of Health devote their whole time to Public Health work. There are 84 male Inspectors and 21 female Inspectors occupied entirely with the discovery and abatement of conditions prejudicial to health. Of the 84 Inspectors, 45 are engaged in the regular Sanitary work, 18 are Inspectors of lodging-houses, sublet-houses, emigrant-houses, canal boats, bakehouses, and the like; 13 are engaged in the inspection of food of all kinds, and of animals under the Diseases of Animals Acts; three are Inspectors of factories and workshops, and Inspectors under the Shop Hours Act; three are engaged in the prevention of smoke; and two are Inspectors of dairies, cowsheds, and milkshops. In addition to the above, many other Inspectors are employed by the Health Committee, in the removal of patients to hospital, in disinfecting houses, clothing, &c. There is also a separate staff of Inspectors acting under the Port Sanitary Authority engaged in the inspection of shipping of all kinds and foodstuffs brought into the Port. All members of the staff are now required to hold some recognised Certificate of Knowledge of Sanitary Science, and the nature of their duties, as well as the careful supervision and training which they receive, necessarily leads to their promotion either in Liverpool or elsewhere.

In order to meet the requirements of a constantly increasing number of candidates wishing to qualify for these posts in Liverpool and other large towns and rural districts, the Sanitary Science Instruction Committee, in which is

represented the City Council and the University of Liverpool, has designed classes for the purpose of providing the necessary instruction in these subjects. These classes are arranged so as to be of a practical character suitable for those wishing to obtain one or more of the various Certificates in Sanitary Science, but they are also adapted to meet the requirements of Builders, Plumbers, Surveyors, Architects, and others interested in Sanitary Science.

The course of instruction given is recognised as sufficient training by the Board of Examiners of the Sanitary Inspectors' Examination Board and the Royal Sanitary Institute.

The Committee hold annually, in the month of April, at the termination of the Session, an Examination in the subjects of the prescribed course of lectures, and the Candidates who are successful in the Examination receive a **Certificate of Sanitary Knowledge,** signed by the Chairman of the Committee and by the Examiners.

The **Museum** attached to the School contains an important and increasing collection of models and diagrams illustrative of the various Sanitary appliances and methods, and of good and defective plumbing and building, also specimens illustrating diseased animal tissues.

An illustrated catalogue of the exhibits can be obtained on application to the Attendant.

Amongst the most valuable Exhibits are:—

1.—Complete model of house drainage.

2.—Cross section of a street showing sewer and its connections with house and street drains. Position of gas, water, and electric light mains, &c.

3.—Full sized portions of brick walls showing damp proof courses of various materials.

4.—Ventilators of all kinds.

5.—Pipes, gullies, syphons, grease traps, &c.

6.—Specimens of building materials.

7.—Meteorological instruments.

8.—Ancient wooden water mains and valves, stone water mains and pipes (Roman); ancient and modern tiles; &c., &c.

The Museum is open to the public every week-day from 9 a.m. to 5 p.m., and on Monday and Wednesday evenings from 7 to 9 p.m. On Saturdays the hours are from 9 a.m. to 1 p.m. No charge is made for admission.

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The **Laboratories in the School of Hygiene** are thoroughly equipped for the more advanced study of Hygiene, Bacteriology, and Diseases of Animals.

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Students who have no previous knowledge or experience of Sanitary Science, are advised to attend the following classes at the Central Municipal Technical School, Byrom Street, or some of the other centres under the Technical Instruction Committee, previous to entering their names for the classes in Ashton Hall:—

Elementary Physics (Sound, Light, and Heat).

Elementary Hygiene.

And one or more of the following:—

Inorganic Chemistry (with practical work).

Practical Arithmetic and Mensuration for Builders.

Preparatory Drawing for Builders *or*

Freehand Drawing.

For Fees of Admission, day and hour of meeting of above Classes, see Prospectus, to be obtained at the Municipal Technical School, Byrom Street.

## Synopsis of Classes held by the Sanitary Science Instruction Committee in the School of Hygiene, Ashton Hall, Ashton St. (corner of Brownlow Hill).

The Classes are held on Monday and Wednesday evenings, at 7-30 p.m. during the winter, commencing on Monday, 27th September. The Demonstrations take place on Saturday afternoons.

The Course consists of over 50 Lectures and Demonstrations, and is divided into three Sections.

### Section I. Building Construction & Sanitary Engineering.

Site and Foundations. Subsoil Drainage. Materials. Construction. Damp Course. Roofs. Internal Finishing. Drainage. Plumbing. Fireproof Construction. Preparation of Reports. Inspection Chambers. Flushing Appliances. Outfall Sewers. Highways and Streets. Examination of a building in course of erection. Laying of drains. Testing drains. Sanitary appliances of all kinds as exhibited in the Museum at the School.

### Drawings, Mensuration, and Planning.

Interpretation of Drawings made to Scale. Plans, Elevations, Sections. Principles of Mensuration. Duodecimals. Measurement of superficial and cubical spaces. Arrangement of buildings on land. Streets, passages, lines of streets. Arrangement of buildings and curtilages. Open space required at front and rear. Limit of height. Windows, etc.

### Water, Soil, Air, Ventilation, Warming and Lighting, Disposal of Refuse.

Chemical composition of water. Domestic supply. Sources of water supply. Collection and storage of water. Distribution. Contamination. Diseases due to water. Purification, distillation, filtration. Hardness. Taking of

samples for chemical analysis. Subsoil water. Ground air. Composition of air. Natural purification of air. Quantity required per head. Standards of purity. Ventilation problems. Cubic space allowed per head in barracks, common lodging-houses, schools, &c. Natural and artificial ventilation. Distribution of heat. Ordinary means of heating a house. Domestic hot water supply. Disposal of refuse. Treatment of sewage. The septic tank. Sewage farms. Disposal of dry refuse.

LECTURERS—

***Mr. J. WILDING, Borough Surveyor and Engineer, Runcorn.***

***Mr. J. T. ALEXANDER, City Building Surveyor, Liverpool***

***Dr. A. A. MUSSEN, Assistant Medical Officer of Health, Liverpool.***

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## Section II.—Meat Inspection, Food and Bacteriology.

These Lectures deal with the subject of Meat inspection on the lines laid down by the Royal Commission on Tuberculosis, on page 21 of their Report:—

(*a*) The law of Meat Inspection, and such Bye-laws, Regulations, &c., as may be in force at the time the Candidate presents himself for examination.

(*b*) The Names and Situations of the organs of the body.

(*c*) Signs of Health and Disease in Animals destined for food, both when alive and after slaughter.

(*d*) The appearance and character of Fresh Meat, Organs, Fat and Blood, and the conditions rendering them, or preparations from them, fit or unfit for Human Food.

LECTURERS—

***Dr. A. A. MUSSEN, Assistant Medical Officer of Health.***

***Dr. W. HANNA, Assistant Medical Officer for the Port of Liverpool.***

***Mr. T. EATON JONES, M.R.C.V.S., Veterinary Superintendent, City of Liverpool.***

## Section III.—Inspection of Nuisances, Outlines of Vital Statistics and Meteorology, Methods of Disinfection, Sanitary Law. Duties of Port Sanitary Inspectors.

Duties of Sanitary Inspectors. Definition of nuisances. Procedure to abate nuisances. Procedure of taking samples of water, foods, drugs, &c., for the purpose of analysis. Inspection of dwellings, including lodging-houses, cellar dwellings, &c. Inspection of dairies, cowsheds and milkshops. Offensive trades.

Vital statistics. Death rate, birth rate, &c. Zymotic death rate. Statistical evidence of the health of towns.

Meteorology and Climate. Thermometers. Sunshine recorders. Wind and rain. Rain gauge. Barometer. Humidity of the atmosphere.

Disinfection, &c. Liquid and gaseous disinfectants. Disinfection by steam. Description of various disinfectors. Practical details in the disinfection of rooms and clothing. The systematic inquiries into outbreaks of infectious sickness. Incubation period of some of the ordinary infectious diseases.

Duties of Port Sanitary Inspectors.

Laws relating to Public Health.

Demonstrations on Destructors, Disinfectors, Examination of Houses, Application of the Smoke Test, Inspection of Slaughter-houses, Dairies and Cowsheds, Canal Boats, Common Lodging-houses, Offensive Trades.

LECTURERS—

***Dr. A. A. MUSSEN, Assistant Medical Officer of Health.***

***Dr. W. HANNA, Assistant Port Medical Officer.***

***Mr. E. W. PIERCE, Deputy Town Clerk, Liverpool.***

The practical demonstrations are given on Saturday afternoons by members of the Sanitary Staff under the direction of the Medical Officer of Health.

**Fees.**

The fee for the complete Sanitary Science Course, including the examination held by the Sanitary Science Instruction Committee, is £2 2s. 0d., to be paid in advance when the student's name is registered. If preferred, however, the sections can be taken separately, and the fee for each of the three parts is 15s. 0d., to be paid on the date of the first lecture in each of the sections.

## SPECIAL COURSE ON FOOD INSPECTION,

### For Candidates preparing for the various Examinations for Meat and Food Inspectors.

The Classes will be held on Tuesday evenings at 8 o'clock, commencing on 2nd November, 1909.

The course will include a series of 18 to 20 Lectures and Demonstrations on the inspection of meat and other foods.

The Lectures will be illustrated by demonstrations on specimens (both fresh and preserved) of diseased meat, &c. Opportunity will also be afforded to visit the Abattoir with the Chief Meat Inspector during the slaughtering and dressing of animals.

### *SYLLABUS.*

Elementary general anatomy and physiology of animals used for food purposes—tissues of body, muscle, nerves, glands, &c., skeleton, flesh. Organs of the body, digestive, circulatory systems, &c.; lymphatic glands, &c.

General pathology—immunity, causes of disease, hæmorrhage, œdema, dropsy, degeneration, &c. inflammation

Bacteriology and bacterial diseases, such as tuberculosis, anthrax, septicæmia, actinomycosis, &c.

Parasites and parasitic diseases.

Methods of inspection of meat for diseased conditions. Meat of different animals, and abnormal conditions, putrefaction, &c.

Preservation of foods.

Microscope and staining specimens.

Adulteration.

Other Foods.—Fish, milk, butter, canned foods, coffee, condiments, &c.

Outline of the laws and bye-laws affecting the inspection and sale of meat and other foods, including their preparation and adulteration.

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An Examination is held by the Sanitary Science Instruction Committee at the termination of the Lectures, and successful students will be awarded a Certificate.

LECTURER—

***Dr. W. HANNA, Assistant Medical Officer of Health, Port of Liverpool.***

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**Fee for the full Course of Lectures and Demonstrations (including Examination), £1-1-0, to be paid in advance when the student's name is registered.**

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Any further information as to the classes set forth in this Prospectus, or other details as to courses of study, &c., can be obtained from the Hon. Secretary at the Public Health Department, Municipal Offices, Dale Street, Liverpool.

Fees may be paid at the office of the Hon. Secretary, or at the School of Hygiene, Ashton Street, prior to the commencement of the lectures.

## CERTIFICATES FOR SANITARY INSPECTORS.

The following Examining Bodies recognise the courses of instruction given at the School of Hygiene, Ashton Hall.

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## SCHOOL OF HYGIENE, ASHTON HALL.

The Sanitary Science Instruction Committee hold annually at the termination of the Session an Examination for Certificate of Sanitary Knowledge. This Examination is open to all students without further fee who have attended the Sanitary Science Course, and to others on payment of £2 2s.

Candidates who are successful in the Examination receive a **Certificate of Sanitary Knowledge,** signed by the Chairman of the Committee and by the Examiners.

The Examination is conducted by three Examiners nominated by the Committee, of whom one at least is not engaged in giving instruction under the Committee.

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## THE ROYAL SANITARY INSTITUTE OF GREAT BRITAIN.

The Courses of Instruction given under the Sanitary Science Instruction Committee are recognised by the Royal Sanitary Institute of Great Britain, and Candidates for the Certificates of the Institute are advised to attend the Classes held in the School of Hygiene.

Full particulars of the subjects of the Examinations, Fees for the Certificates, and dates on which the Examinations are held in Liverpool and other centres, can be obtained from E. White Wallis, Esq., Secretary, Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W.

# THE SANITARY INSPECTORS' EXAMINATION BOARD.

Incorporated 8th February, 1899.

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## Regulations as to Examinations and Instruction.

The Examination shall consist of two parts, Preliminary and Technical.

The Preliminary Examination shall be written and oral, upon the following subjects:—

English, including writing, spelling, composition and dictation.

Arithmetic, including fractions, vulgar and decimal, simple proportion, common weights and measures, mensuration of rectangles and rectangular solids as required by Schedule I., Standard 6, of the Day School Code, 1898, of the Education Department, together with mensuration of circles, cylinders, and spheres.

No Candidate shall be approved who fails to show in each of these subjects such proficiency as shall satisfy the Examiners of his ability to prepare official reports.

The Technical Examination shall be written, oral, and practical, upon the following subjects so far as they bear upon the duties of a Sanitary Inspector:—

1. Elementary Physics and Chemistry in relation to Water, Soil, Air, and Ventilation.
2. Elementary Statistical Methods.
3. Municipal Hygiene or Hygiene of Communities, including Prevention and Abatement of Nuisances, Sanitary Defects in and about Buildings and their Remedies, Water Supplies,

Sanitary Appliances, Drainage, Refuse Removal and Disposal, Offensive Trades, Disinfection, Food Inspection.

4. Statutes, and the Orders, Memoranda, and Model By-laws of the Local Government Board, and the By-laws in force in the Administrative County of London.

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Every Candidate must forward to the Secretary of the Board, not later than fourteen days before the commencement of the Examination, notice of his intention to present himself for examination, and half the appointed fee. The remaining half of the fee must be paid not later than seven days before the date of the Examination.

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Candidates for the Technical Examination must pass the Preliminary Examination, unless they shall have passed an Examination recognised by the Board in substitution for it; and must forward to the Secretary of the Board not later than fourteen days before the commencement of the Examination:—

1. Evidence of having attained the age of twenty-one years.
2. A recent testimonial as to personal character, if possible, from a Clergyman, Medical Officer of Health, or other person holding an official position.
3. Evidence of having passed a recognised alternative Examination, in the case of Candidates who claim exemption from the Preliminary Examination.
4. Evidence of training, consisting of:—
   (*a*) Evidence of having held for not less than three years whole time Employment as Sanitary Inspector,

Inspector of Nuisances, or Inspector and Surveyor. Provided that in the case of a person holding the Certificate of the Sanitary Institute, or other Examining body approved by the Board, the term of employment to be reduced to twelve months subsequent to having obtained such Certificate; or

(*b*) A Certificate of Instruction, as prescribed below, from an Institution recognised by the Board.

Provided that a person who is already on Part I. of the Board's Register as having prior to 31st December, 1898, obtained the Certificate of the Sanitary Institute or the Royal Institute of Public Health, shall not be required to produce such evidence of employment as a Sanitary Inspector, or Certificate of Instruction.

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**The Certificate of Instruction must show that the Candidate has attended a course of Instruction approved by the Board,** consisting of not less than 32 systematic lectures supplemented by demonstrations, and comprising the subjects of the Technical Examination, including:—

(*a*) Elementary Physics and Chemistry in relation to Water, Soil, Air, and Ventilation.

(*b*) Building Construction in its Sanitary relations. Measurement and drawing plans to scale.

(*c*) The practical duties of a Sanitary Inspector, *e.g.*, drawing up notices as to sanitary defects, taking samples of water, food, and drugs for analysis, food inspection, drain-testing, disinfection, methods of inspection, note-taking and reporting.

The fee for the Preliminary Examination shall be one guinea, and for the Technical Examination three guineas. No Fees will be returned except in the case of a Candidate who having entered for both Examinations fails to pass the

Preliminary Examination in which case the fee for the Technical Examination will be returned to him.

If a Candidate be prevented from attending by illness, or other cause deemed sufficient by the Board, he will be admitted to the next Examination without further fee.

An unsuccessful Candidate will be admitted to one subsequent Examination on payment of one-half the above fees.

The Examinations shall be held twice in each year.

Every Candidate who passes the Examination will receive a Certificate to that effect, qualifying him for appointment as Sanitary Inspector under section 108 (2) (d) of the Public Health (London) Act, 1891, and under any subsequent Act of Parliament or Order of the Local Government Board which may require Sanitary Inspectors or Inspectors of Nuisances to hold Certificates.

St. Stephen's House, London, S.W.

**All communications to be addressed to the Hon. Secretary, 1, Adelaide Buildings, London Bridge, London, E.C.**

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**An Examination under the Sanitary Inspectors' Examination Board will probably be held in Liverpool about Easter, 1910, notice of which will be given later.**

## DUTIES OF INSPECTORS OF NUISANCES as defined by the Order of the Local Government Board, March, 1891.

(1) He shall perform, either under the special directions of the Sanitary Authority, or so far as authorised by the Sanitary Authority, under the directions of the Medical Officer of Health, or in cases where no such directions are required, without such directions, all the duties specially imposed upon an Inspector of Nuisances by the Public Health Act, 1875, or by any other Statute or Statutes, or by the Orders of the Local Government Board, so far as the same apply to his office.

(2) He shall attend all Meetings of the Sanitary Authority when so required.

(3) He shall, by Inspection of the District, both systematically at certain periods, and at intervals as occasion may require, keep himself informed in respect of the nuisances existing therein that require abatement.

(4) On receiving notice of the existence of any nuisances within the District, or of the breach of any bye-laws or regulations made by the Sanitary Authority for the suppression of nuisances, he shall, as early as practicable, visit the spot, and inquire into such alleged nuisance or breach of bye-laws or regulations.

(5) He shall report to the Sanitary Authority any noxious or offensive businesses, trades, or manufactories established within the District, and the breach or non-observance of any bye-laws or regulations made in respect of the same.

(6) He shall report to the Sanitary Authority any damage done to any works or water supply, or other works belonging to them, and also any cause of wilful or negligent waste of water supplied by them, or any fouling by gas, filth, or otherwise, of water used for domestic purposes.

(7) He shall from time to time, and forthwith upon complaint, visit and inspect the shops and places kept or used for the preparation or sale of butchers' meat, poultry, fish, fruit, vegetables, corn,

bread, flour, milk, or any other article to which the provisions of the Public Health Act, 1875, in this behalf shall apply, and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, milk, or any other article as aforesaid, which may be therein; and in case any such article appear to him to be intended for the food of man, and to be unfit for such food, he shall cause the same to be seized, and take such other proceedings as may be necessary in order to have the same dealt with by a Justice. Provided, that in any case of doubt arising under this clause, he shall report the matter to the Medical Officer of Health, with the view of obtaining his advice thereon.

(8) He shall, when and as directed by the Sanitary Authority, procure and submit samples of food, drink, or drugs suspected, to be analysed by the analyst appointed under "The Sale of Food and Drugs Act, 1875," and upon receiving a certificate stating that the articles of food, drink or drugs are adulterated, cause a complaint to be made, and take the other proceedings prescribed by that Act.

(9) He shall give immediate notice to the Medical Officer of Health of the occurrence within the district of any contagious, infectious or epidemic disease; and whenever it appears to him that the intervention of such officer is necessary in consequence of the existence of any nuisance injurious to health, or of any overcrowding in a house, he shall forthwith inform the Medical Officer of Health thereof.

(10) He shall, subject to the directions of the Sanitary Authority, attend to the instructions of the Medical Officer of Health, with respect to any measures which can be lawfully taken by an Inspector of Nuisances under the Public Health Act, 1875, or under any Statute or Statutes, for preventing the spread of any contagious, infectious, or epidemic disease of a dangerous character.

(11) He shall enter from day to day, in a book to be provided by the Sanitary Authority, particulars of his inspections and of the action taken by him in the execution of his duties. He shall also keep a book or books, to be provided by the Sanitary Authority so arranged as to form, as far as possible, a continuous record of the sanitary condition of each of the premises in respect of which any action has been taken under the Public Health Act, 1875, or under any other Statute or Statutes, and shall keep any other systematic records that the Sanitary Authority may require.

(12) He shall at all reasonable times, when applied to by the Medical Officer of Health, produce to him his books, or any of them, and render to him such information as he may be able to furnish with respect to any matter to which the duties of Inspector of Nuisances relate.

(13) He shall, if directed by the Sanitary Authority to do so, superintend and see to the due execution of all works which may be undertaken under their direction for the suppression or removal of nuisances within the district.

(14) He shall, if directed by the Sanitary Authority to do so, act as officer of the said Authority as Local Authority under the Contagious Diseases (Animals) Act, 1886, and any orders and Regulations made thereunder.

(15) In matters not specially provided for in this order, he shall observe and execute all the lawful orders and directions of the Sanitary Authority, and the orders of the Local Government Board which may be hereafter issued, applicable to his office.

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